

Without the confirmation of stronger eyes and better knowledge than I myself possess, I could not feel satisfied in recording any species of *Crustacea* that can only be determined by microscopic power. All those preceding the *Entomostraca* in arrangement came under the notice of the former gentleman, and all of these (using the term in its widest sense) under that of the latter. To both, my warmest thanks are due, as they also are to John Edward Gray, Esq., for his extreme kindness and liberality on this, as on all former occasions, when I required to make use of the great national collection of zoology placed under his most zealous and effective superintendence.

XXIII.—*Descriptions of some species of Brachiopoda.* By Mr. T. DAVIDSON, Mem. Geol. Soc. France, and Mr. J. MORRIS, F.G.S.

[With two Plates.]

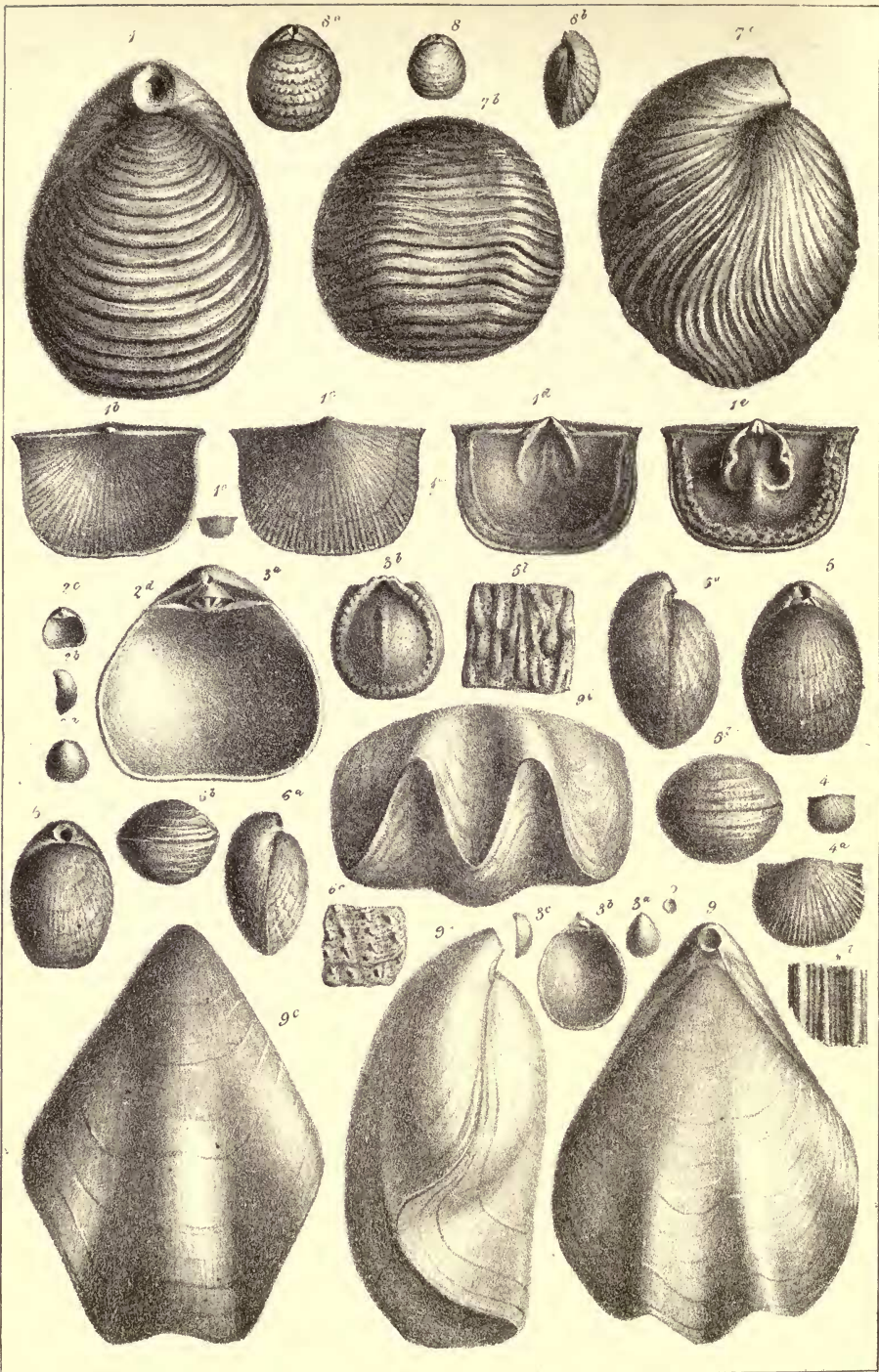
THE following notice includes descriptions of a few new or little-known Brachiopoda, some of which are interesting from their localities and associations, more especially the *Leptana*, of which three species have lately been found in the liassic group of England and one in that of France. For the description of the French species we are indebted to M. Bouchard, whose collection contains good specimens of this shell.

Leptana liasiana, Bouchard. Pl. XVIII. fig. 2 *a—d*.

Shell rounded, inequivalved, equilateral, smooth; dorsal valve gibbose posteriorly, becoming flatter anteriorly, with a slight longitudinal groove ending in a notch on the front margin of the shell. Beak small, slightly incurved, truncated at the apex by a minute circular foramen, similar to that which occurs in many other *Leptana*, for instance, *L. alternata* of Indiana, North America; this truncation may also be observed in some species of *Orthis* from Russia. Area double, interrupted on the dorsal valve by a large and slightly convex deltidium, which arises at the apical opening and gradually enlarges towards the base, and occupies one-third of the width of the area. The deltidium is slightly notched, the notch being partly closed by the large median tooth of the ventral valve, the exterior face of which is grooved by four furrows which afforded a passage for the muscular fibres of attachment arranged in four bundles. The ventral valve is deeply concave, following the contour of the dorsal valve, so that little space remained between them for the body of the animal. Cardinal margin about half the width of the shell. Length 6, width 5 millimetres.

Locality: the lias of Pic de Saint Loup, near Montpellier, Herault.





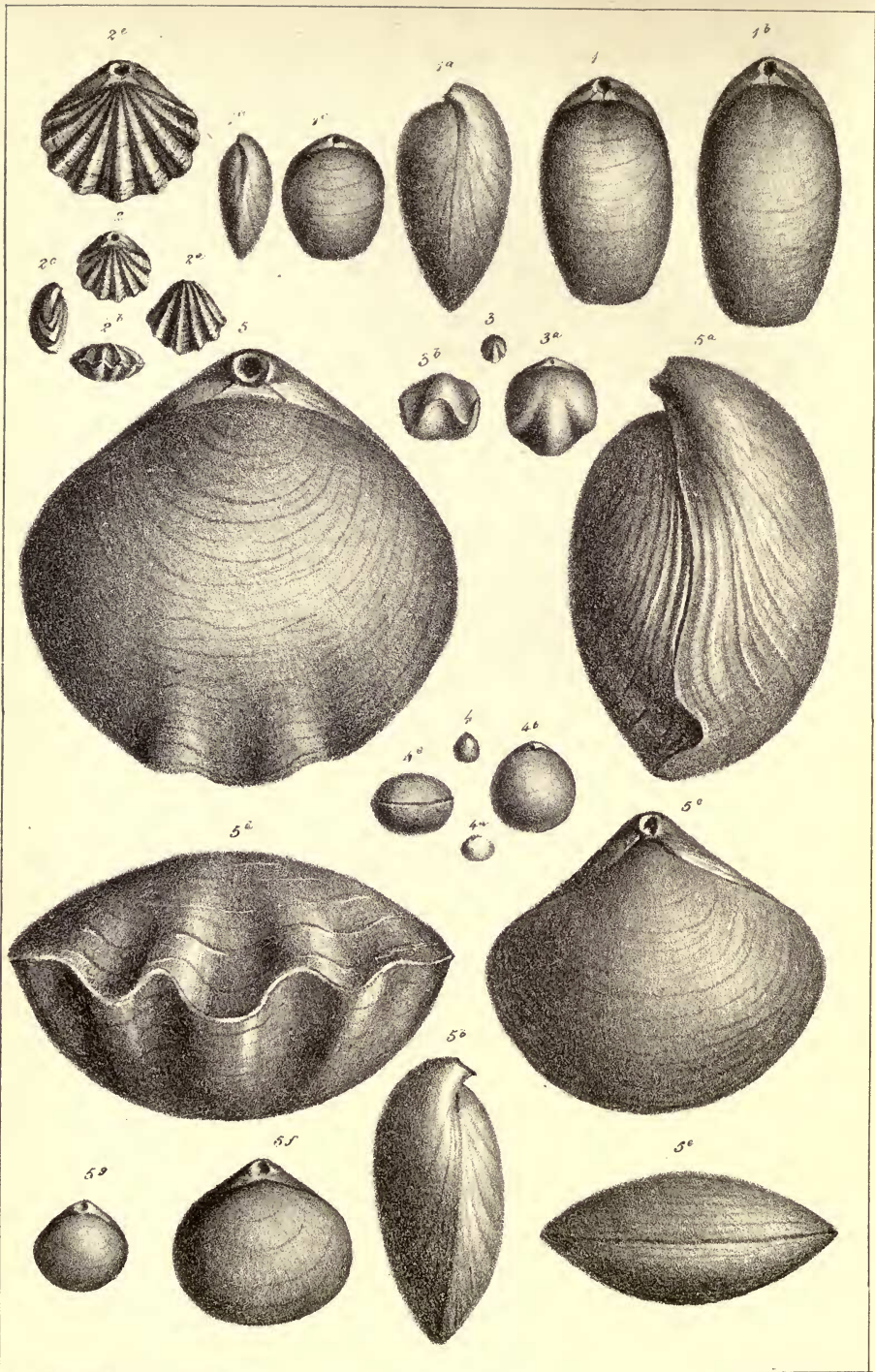
Wardley Printer 3 Wellington St. Strand

T. Davidson del et lith.

1. *Terebratulula Moorei* (Duv.)
2. ——— *Liasiana* (Bouchard.)
3. ——— *Bouchardii* (Dar.)
4. ——— *Pearceii* (Dar.)
5. *Terebratulula spinulosa* (Mor.)

5. *Terebratulula rugulosa* (Mor.)
7. ——— *sulcifera* (Mor.)
8. ——— *squamata* (Mont.)
9. ——— *Phillipouii* (Mor.)





Makeloy Printer 5 Wellington St Strand

T Davidson del et lith

- 1. *Terebratulula longa* (Ramer)
- 2. ————— *stabilem* (Degr.)
- 3. ————— *pygmaea* (Mor.)

- 4. *Terebratulula* (Nor. Spec. ^a)
- 5. ————— *Maxillata* (Sow)

The general form of this *Leptæna* approaches that of *Productus*, the species which it most closely resembles being the *L. oblonga*, Pander. It has the same convexity and smoothness, and the beak is similarly truncated by an apical opening; the area and pedicular opening has also some analogy to the Russian species, but it differs in the contour of the dorsal valve, and the notch in the front margin. (Bouchard MSS.)

Leptæna Moorei, Davidson. Pl. XVIII. fig. 1 a—c.

Shell small, depressed, transversely quadrangular, ornamented by numerous fine costæ scarcely visible without a lens. Dorsal valve slightly convex; area double, as wide or wider than the shell. Deltidium small, chiefly filled by the median tooth of the ventral valve; tooth with four depressions by which the muscular fibres of attachment passed outwards. Length $1\frac{1}{2}$ line, width 2 lines.

The muscular impressions in the interior of both valves are very peculiar to this species, and indicate that it did not attain larger dimensions than those above assigned to it.

This elegant small species was first discovered in the marlstone beds near Ilminster by Charles Moore, Esq., to whom it is dedicated; and I trust ere long this gentleman will enrich science by a detailed account of this interesting locality, which he has so carefully investigated. The following section, forwarded by Mr. Moore, shows the position of the bed containing the *Leptænae*:—

1. Rubbly beds 6 to 10 feet with numerous *Ammonites*.
2. Clay 8 inches.
3. Yellow limestone 3 to 4 inches.
4. Layers of clay 18 inches, *Leptæna Pearcei*.
5. *Leptæna* bed 1 inch, *Leptæna Moorei* and *L. Bouchardii*.
6. Marlstone $2\frac{1}{2}$ inches.
7. Greenish sand 4 inches, containing numerous *Belemnites*.
8. Marlstone.

The discovery of four species of *Leptæna* in the lias is rather an interesting fact, as proving that this genus, so abundant in the palæozoic period, existed also at the liassic epoch, although the forms are considerably reduced in size from those of their precursors. The existence of *Leptæna* at the early part of the secondary period teaches also how cautious we should be in assigning to any genus a limited duration in time, or that the lines of demarcation between successive periods are not so arbitrary regarding certain typical forms as our first investigations would lead us to infer.

Leptæna Bouchardii, Davidson. Pl. XVIII. fig. 3 a, b, c.

Shell very small, almost a perfect oval, surface smooth; dorsal valve very convex, ventral valve very concave, leaving only a small

space for the animal; beak small, not much recurved, entire, and not perforated at the extremity; area smaller than the greatest width of the shell; deltidium very large.

The interior of the ventral valve presents some characters resembling *Chonetes*, but it has no tubes on the cardinal area, which are considered by M. de Verneuil and others as characteristic of that genus. Round the internal edge of the ventral valve is a row of tubercles, which diminish in size towards the front of the shell, and the centre has a ridge also tuberculated, the remaining space, interiorly, being covered by a fine irregular punctuation, which in this respect has some analogy to *Chonetes*; but in that genus the median tooth is terminated by a point; in our shell this tooth presents externally three or four grooves, as in the genus *Leptæna*: this and other characters have induced us to place the species under *Leptæna*, although it possesses so many characters common to both genera, that it may be considered as forming a connecting link between them.

This species is readily distinguished from *Leptæna liasiana* by its more elegant form, the ventral valve of *L. Bouchardii* is more regularly concave, and the dorsal valve more convex; in this species also the beak of the dorsal valve is entire, in *L. liasiana* it is always truncated and perforated, and the front is indented and not so regularly rounded as in *L. Bouchardii*.

Rather more than a line in width and one and a half in length.

This species never attained a very large size, as the internal characters presented by the ventral valve appear to be those belonging to a full-grown shell.

Found by Mr. Moore, associated with *L. Moorei*, in the *Leptæna* bed previously described under that species.

It is dedicated to M. Bouchard of Boulogne, who has kindly examined the species and assisted in defining the characters which distinguish it from *L. liasiana*, to which it bears the greatest resemblance.

Leptæna Pearcei, Davidson. Pl. XVIII. fig. 4 *a, b*.

Of this small species the dorsal valve is only known, which shows that it differed materially from *L. Moorei* by this valve being much more convex, and the striæ which ornament its surface having two or three smaller ones between each larger one, as seen in fig. 4 *b*, while in *L. Moorei* the costæ appear of the same size; the shape of the shell is also more rounded and larger than *L. Moorei*. Rather more than 2 lines long and 3 broad.

This species occurs in a clay stratum above the *Leptæna* bed containing *L. Moorei*, and not associated with it.

Also discovered by Mr. Moore, and dedicated at his request to his late friend Mr. C. Pearce of Bath.

Terebratula rugulosa, Morris. Pl. XVIII. fig. 5, 5 a—c.

Shell ovate; valves nearly equally convex, somewhat truncated anteriorly, dorsal valve more gibbose than the ventral, with a produced, rather obtuse and enlarged beak, but slightly recurved; foramen rather large; deltidium wider than high, bordered by elevated lateral ridges. Cardinal area smooth, lateral ridges moderately distinct. The whole surface is covered by minute rugæ disposed as follows: those which cover the middle portion of each valve are longitudinal and but little interrupted; those on the sides diverge and have a slight tendency to break into small oblong tubercles, especially towards the beak of the dorsal valve; the intervening spaces are distinctly and thickly punctured (fig. 5 c).

A fine series of this interesting species are in the collections of Mr. Moore, Mr. Bunbury and Mr. Pratt. It is found in the chalk marl at Chard, Somerset, and also occurs at Rouen.

The following notice of the locality is communicated by Mr. Moore. The bottom beds of the quarry are alternating layers of chert and fine sand having a height of about twenty feet, but are no doubt thicker, as the lower beds are not worked; teeth of fishes are occasionally found in it and a few corals; above this is a thin band of chalk marl, exceedingly fossiliferous; it contains several species of *Ammonites*, *Nautilus*, *Hamites*, *Scaphites*, *Turritiles*; *Cerithium*, *Pleurotomaria* and *Trochus*; *Inoceramus*, *Arca*, *Cardium*, *Echini*, &c., mostly in a beautiful state of preservation. This bed is overlaid by the white chalk containing but few fossils.

Terebratula spinulosa, Morris. Pl. XVIII. fig. 6, 6 a—c.

Subovate, but with the broadest part rather behind the middle and the front subtruncated; dorsal valve rather more convex than the ventral; beak incurved, foramen tolerably large, the anterior portion touching the apex of the ventral valve; cardinal area concave, minutely tuberculated, with distinct lateral ridges, diverging almost at right angles from the foramen. Surface of both valves covered with minute prickly tubercles (fig. 6 c) and fine radiating striæ; lines of growth distinct.

This is a very interesting and readily distinguished species, by its form and peculiar structure. The prickly tubercles have a tendency to a linear arrangement, and between them are numerous small raised puncta, and fine or almost obsolete striæ; the minutely tuberculated cardinal area is also a well-marked character. The specimen figured is from the collection of A. Lewis, Esq., of Wolverhampton, and Mr. Waterhouse has also pointed out the existence of a species nearly resembling this, but in which